Great Lakes Commercial Fisheries

By

Ronald E. Kinnunen

Michigan Sea Grant Extension

710 Chippewa Square, Suite 202

Marquette, Michigan 49855, USA

August 2003

Table of Contents

Great Lakes Commercial Fisheries

The Great Lakes still support a sustainable commercial fishery. The activity of this commercial fishery varies from state to state and the province of Ontario. Commercial fishery operations are licensed through the states, province of Ontario, and the tribal nations. Every lake has a Native American component of the commercial fishery except Lake Erie. The commercial fishery is generally regulated by the amount of fish that can be caught (quota) and/or the amount and type of gear that can be used (effort). In the province of Ontario dockside monitoring occurs where the commercial fisher actually has to have his catch paperwork already filled out before he reaches the dock and 50% of the total catch is actually checked annually.

Different types of fishing gear are used to catch the various species found in the Great Lakes. In the U.S. waters of the Great Lakes trap nets are used to catch lake whitefish, carp, catfish, sheepshead, white bass, white perch, yellow perch, and eel. Gill nets are used to catch lake whitefish, lake trout, salmon, walleye, yellow perch, and white perch. Hoop nets are used to catch bullheads and eel. Seines are used for carp and white bass. Trawl fishing is used for smelt and lake whitefish, and hook/trot lines are used for catfish and eel.

In the Canadian waters of the Great Lakes trap nets are used for all commercial species in Lake Ontario and for lake whitefish, lake trout, walleye, yellow perch, white perch, and white bass in the other Great Lakes. Gill nets are used for lake whitefish, lake trout, walleye, yellow perch, white perch, and white bass. Hoop nets are use to catch all commercial species. Seines are used for carp, yellow perch, and a variety of panfish. Trawl fishing is used for both lake whitefish and smelt but is still experimental in Canada.

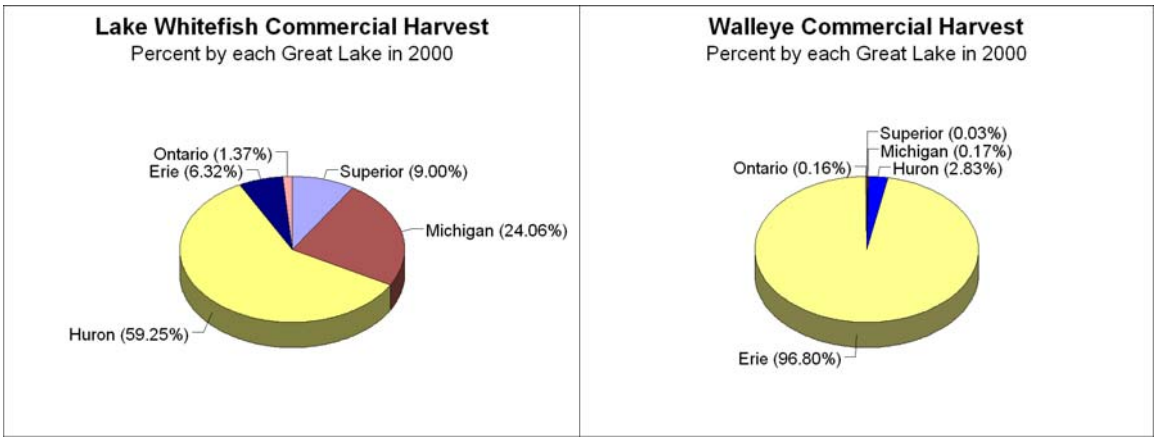
To keep a sustainable commercial fishery in the Great Lakes there are various closures of the fishery during spawning season, and in various areas of the Great Lakes there are both permanent and seasonal designated refuge areas. With many fish species there is a minimum size restriction to allow them to at least spawn once before they enter the fishery.

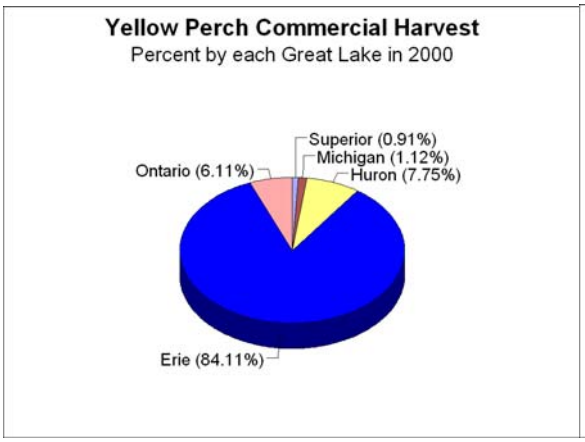
In 2000 the lake whitefish was the most harvested fish in both U.S. and Canadian waters of the Great Lakes accounting for over 21 million pounds and worth over $18 million in dockside value (Table 1). Yellow perch and walleye each were worth over $10 million in dockside value in the year 2000. The commercial fish that had the most value per pound was the yellow perch at just over $2 per pound.

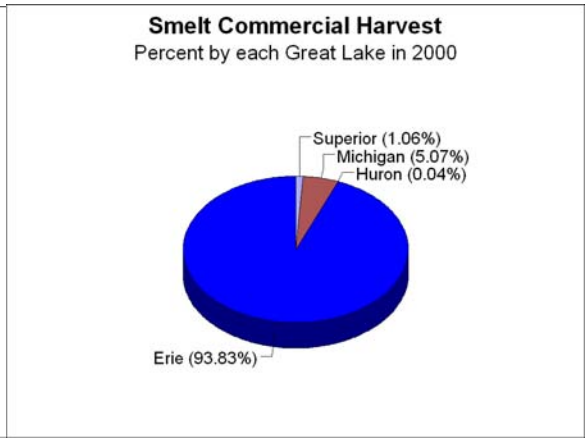
Table 1. Great Lakes commercial fish harvest by pounds and value in the year 2000.

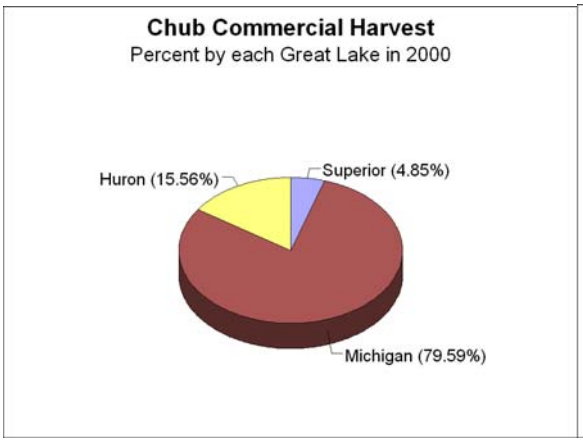
Species	U.S. lbs	U.S. Value	Canada lbs	CDN Value (U.S.$)	Total lbs	Total Value	$/lb
Lake Whitefish	9886310	$10,256,122	11167000	$8,379,717	21053310	$18,635,839	$0.89
Yellow Perch	1169422	$3,034,896	4004000	$7,887,079	5173422	$10,921,975	$2.11
Walleye	22891	$38,851	7269000	$10,081,376	7291891	$10,120,227	$1.39
Chubs	1625614	$1,588,906	300000	$301,500	1925614	$1,890,406	$0.98
Smelt	460842	$751,793	7190000	$1,107,979	7650842	$1,859,772	$0.24
Lake Trout	994087	$531,462	563000	$230,098	1557087	$761,560	$0.49
Channel Catfish	507294	$299,270	31000	$9,762	538294	$309,032	$0.57
Carp	1304048	$140,837	197000	$19,799	1501048	$160,636	$0.11

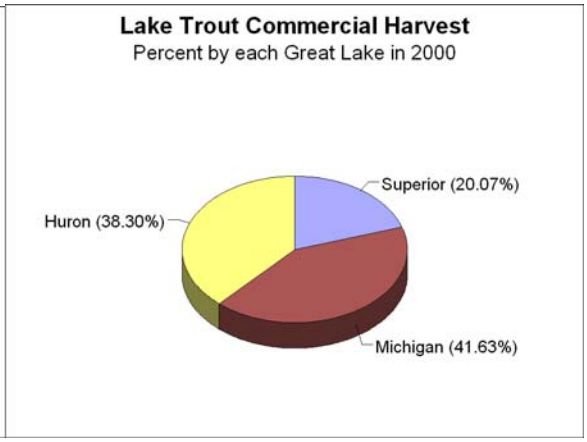
Specific Great Lakes produce most of the fish species commercially harvested. In 2000 about 60% of the lake whitefish came from Lake Huron; 97% of the walleye, 84% of the yellow perch, and 94% of the smelt came from Lake Erie; and 80% of the chubs and 42% of the lake trout came from Lake Michigan. Refer to the following pie charts.



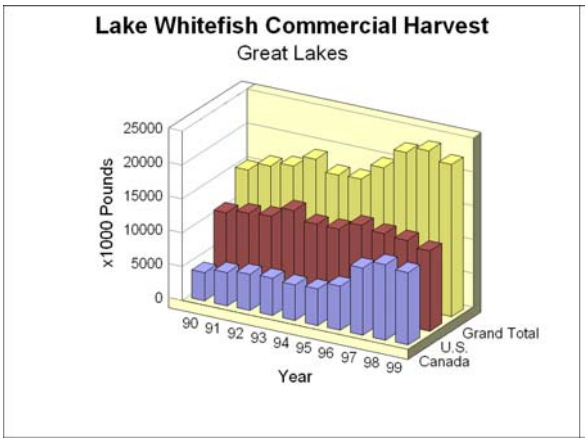


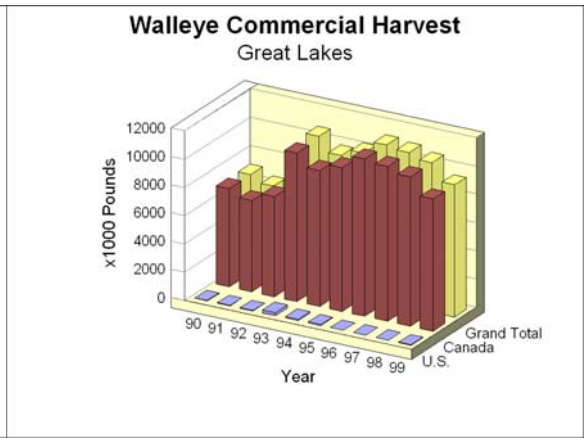


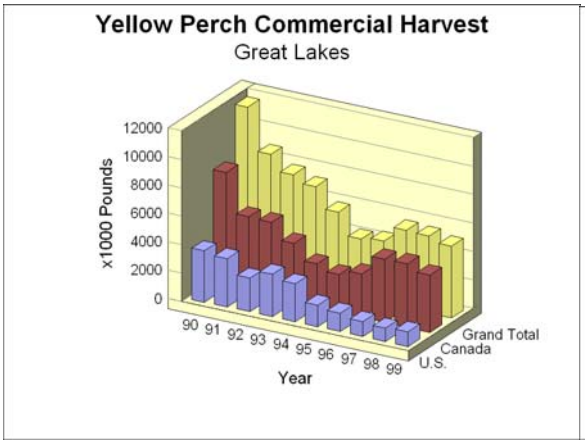


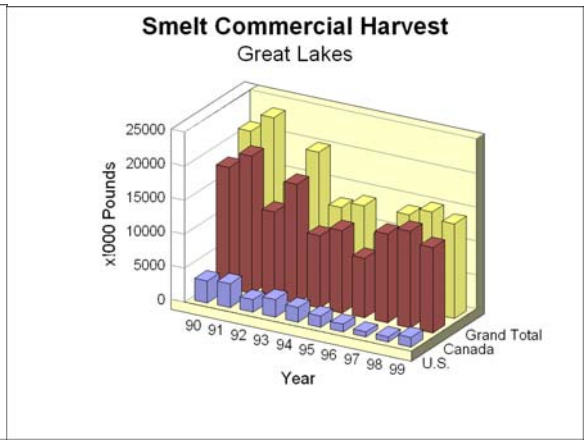


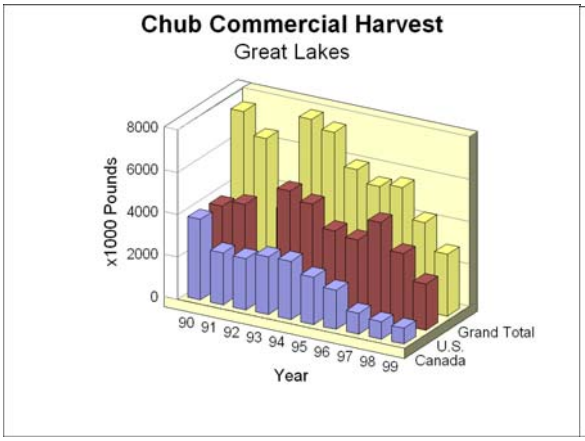
Through the 1990s most of the lake whitefish, lake trout, chubs, channel catfish, and carp were harvested from the U.S. waters of the Great Lakes while most of the yellow perch, walleye and smelt came from the Canadian waters. Refer to the graphs that follow.

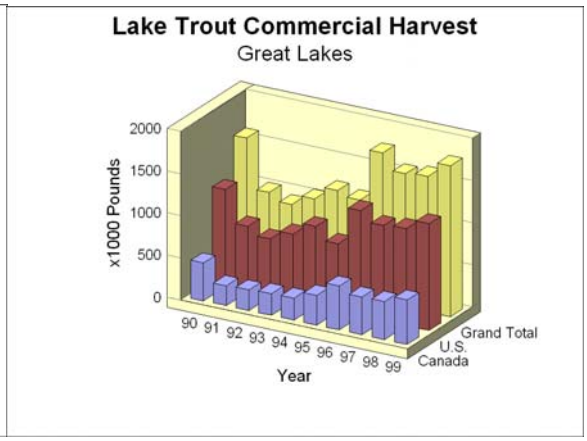


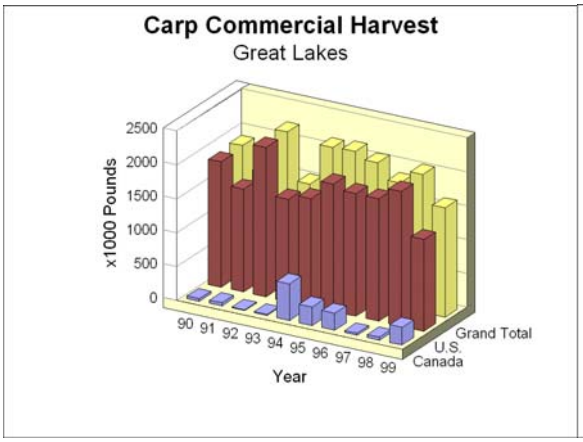


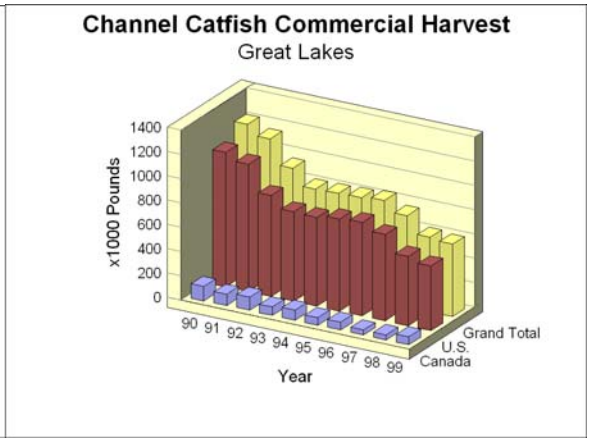

Yellow Perch Commercial Harvest
Great Lakes
x1000 Pounds
12000
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Smelt Commercial Harvest
Great Lakes
x1000 Pounds
25000
20000
15000
10000
5000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Chub Commercial Harvest
Great Lakes
x1000 Pounds
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada


Lake Trout Commercial Harvest
Great Lakes
x1000 Pounds
2000
1500
1000
500
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada


Carp Commercial Harvest
Great Lakes
x1000 Pounds
2500
2000
1500
1000
500
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada


Channel Catfish Commercial Harvest
Great Lakes
x1000 Pounds
1400
1200
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada

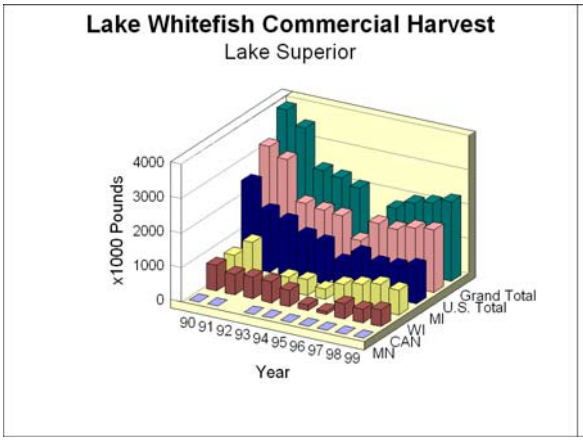
Lake Superior Commercial Fishery

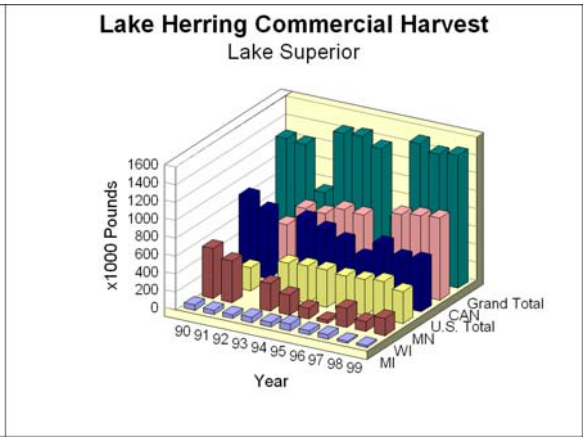
The lake whitefish was the most harvested fish in U.S. waters of Lake Superior in the year 2000, and it was the second most harvested fish in Canadian waters. The total harvest of lake whitefish almost approached 2 million pounds with a dockside value of just over $1.7 million (Table 2). Lake herring was the most harvested fish in Canadian waters and the second most harvested fish in U.S. waters. Nearly 1.4 million pounds of lake herring was caught with a dockside value of just over $0.5 million.

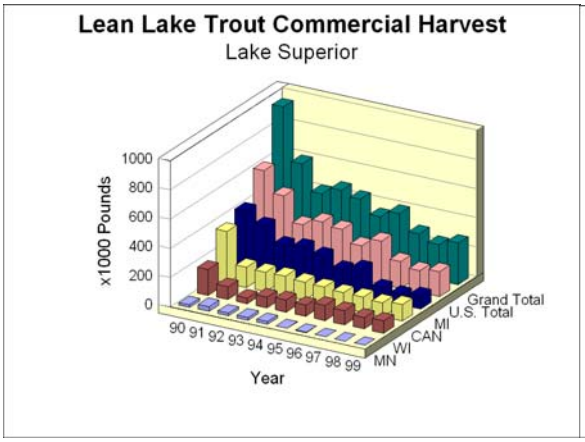
Table 2. Lake Superior commercial fish harvest by pounds and value in the year 2000.

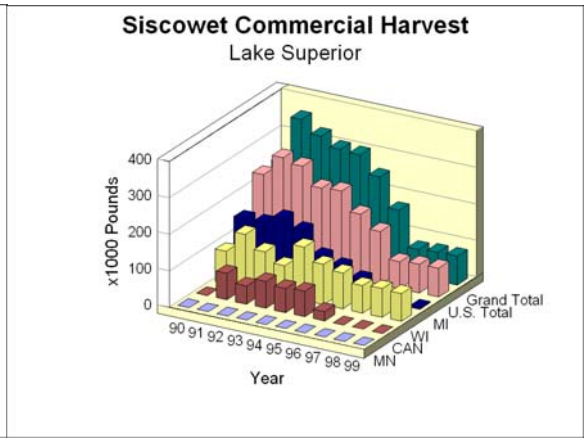
Species	U.S. lbs	U.S. Value	Canada lbs	CDN Value (U.S.$)	Total lbs	Total Value	$/lb
Lake Whitefish	1429470	$1,365,776	497000	$372,949	1926470	$1,738,725	$0.90
Lake Herring	617042	$247,900	756000	$293,782	1373042	$541,682	$0.39
Lake Trout -lean	170075	$98,127	130000	$53,131	300075	$151,258	$0.50
Chubs	92424	$55,476	1000	$1,005	93424	$56,481	$0.60
Smelt	69881	$28,495	11000	$1,695	80881	$30,190	$0.37
Lake Trout - siscowet	61909	$21,699	0	$0	61909	$21,699	$0.35

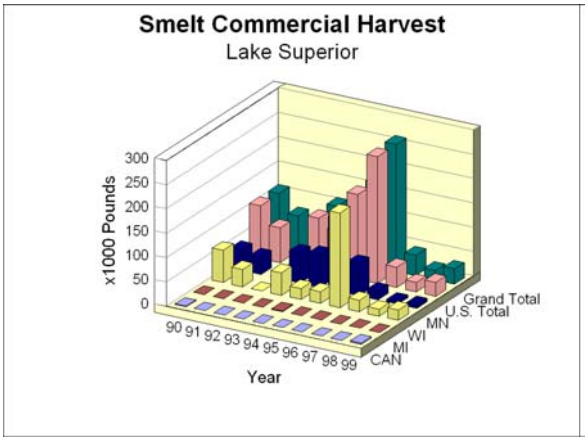
Through the 1990s the majority of lake whitefish from Lake Superior was harvested from U.S. waters with most coming from the states of Michigan and Wisconsin. During this time period lake herring harvest was about equally divided between the U.S. and Canada with most of the lake herring harvest from the U.S. side coming from the states of Minnesota and Wisconsin. The majority of the lake trout harvest in the 1990s came from U.S. waters with most coming from the states of Michigan and Wisconsin. Despite very high numbers of siscowet lake trout, which lives in the deep waters of Lake Superior and is very fat, there has been less harvest in recent years because of contaminant concerns and the loss of markets. Most of the smelt and chub harvest comes from the U.S. waters of Lake Superior. Refer to the graphs on the following page.

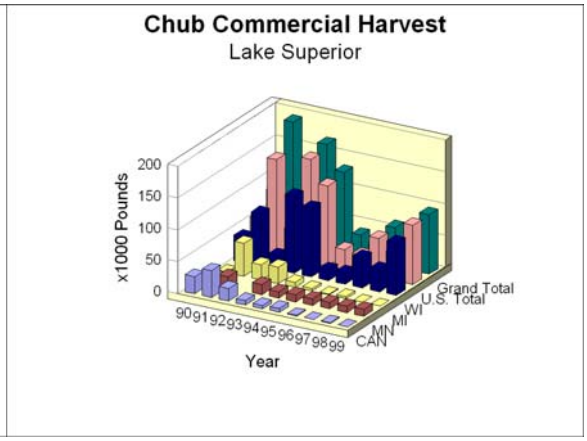

Lake Whitefish Commercial Harvest
Lake Superior
x1000 Pounds
4000
3000
2000
1000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S. Total
MI
WI
CAN
MN


Lake Herring Commercial Harvest
Lake Superior
x1000 Pounds
1600
1400
1200
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
CAN
U.S. Total
MN
WI
MI


Lean Lake Trout Commercial Harvest
Lake Superior
x1000 Pounds
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S. Total
MI
CAN
WI
MN


Siscowet Commercial Harvest
Lake Superior
x1000 Pounds
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S. Total
MI
WI
CAN
MN


Smelt Commercial Harvest
Lake Superior
x1000 Pounds
300
250
200
150
100
50
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S. Total
MN
WI
MI
CAN


Chub Commercial Harvest
Lake Superior
x1000 Pounds
200
150
100
50
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S. Total
WI
MI
MN
CAN

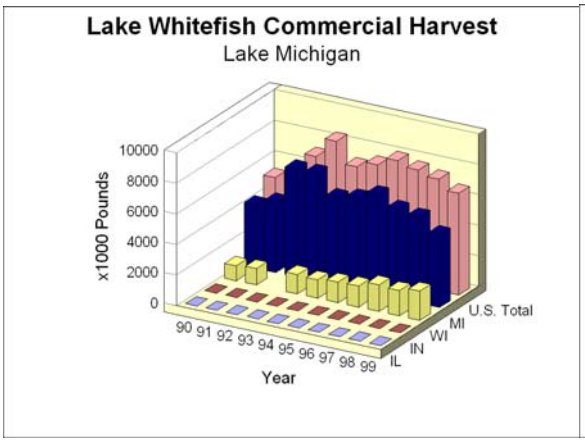
Lake Michigan Commercial Fishery

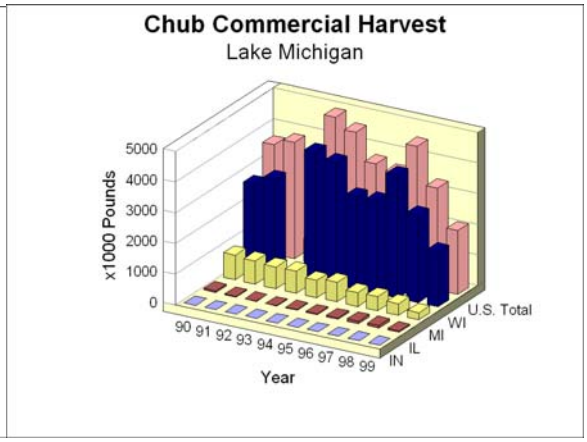
The lake whitefish was the most harvested fish in Lake Michigan in 2000. Nearly 5 million pounds was taken from the lake with a dockside value of just over $5 million. The second most harvested fish in that same year was the chub, which amounted to just over 1.5 million pounds with a dockside value of just over $1.5 million (Table 3).

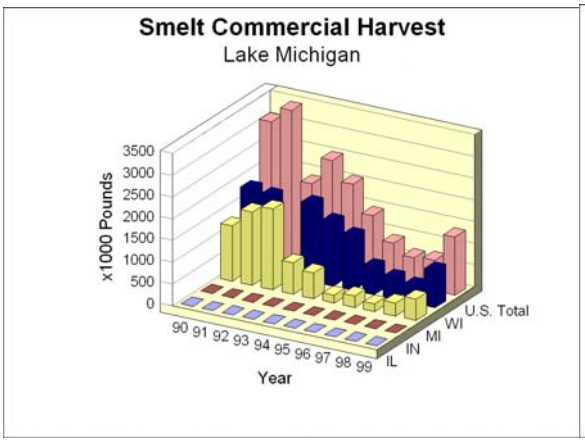
Table 3. Lake Michigan commercial fish harvest by pounds and value in the year 2000.

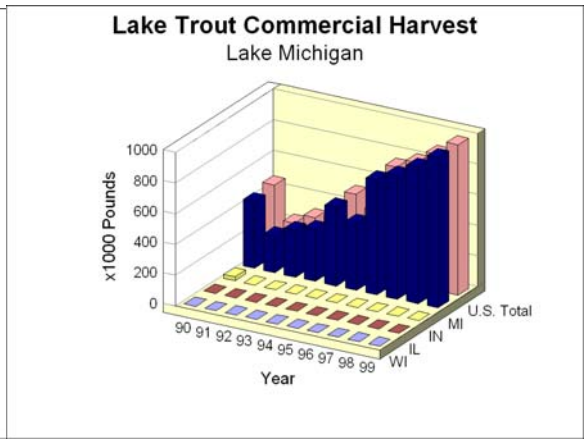
Species	U.S. lbs	U.S. Value	$/lb
Lake Whitefish	4793087	$5,152,409	$1.07
Chubs	1532514	$1,532,739	$1.00
Smelt	387819	$721,539	$1.86
Lake Trout	622474	$336,212	$0.54
Yellow Perch	58000	$153,113	$2.64
Round Whitefish	26522	$11,102	$0.42

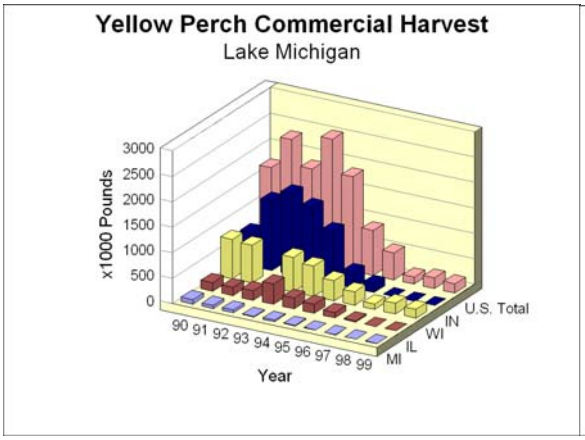
During the 1990s the majority of lake whitefish harvested from Lake Michigan came from Michigan waters with some additional harvest from Wisconsin. In the 1990s the majority of the chub harvest came from Wisconsin waters with additional harvest from Michigan. Because of declining yellow perch populations in Lake Michigan, the commercial fishery for this species was eliminated in Illinois and Indiana and further restricted in Wisconsin, which accounted for the declining harvest. The smelt harvest comes from trawl fisheries in both Wisconsin and Michigan. Virtually all of the lake trout harvest comes from Michigan waters. A large trawl fishery once existed for alewife but was restricted to protect this fish species as the forage fish for the recreational salmonid fishery. Round whitefish usually account for a small part of the commercial fishery but in 1993 a large harvest of this species occurred in Wisconsin waters. Refer to the following graphs.

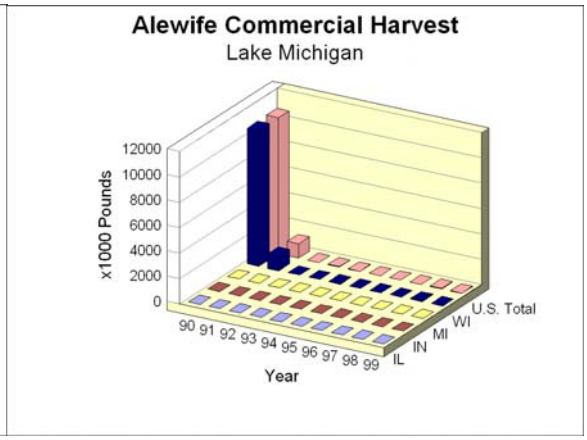

Lake Whitefish Commercial Harvest
Lake Michigan
x1000 Pounds
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
IL
IN
WI
MI
U.S. Total

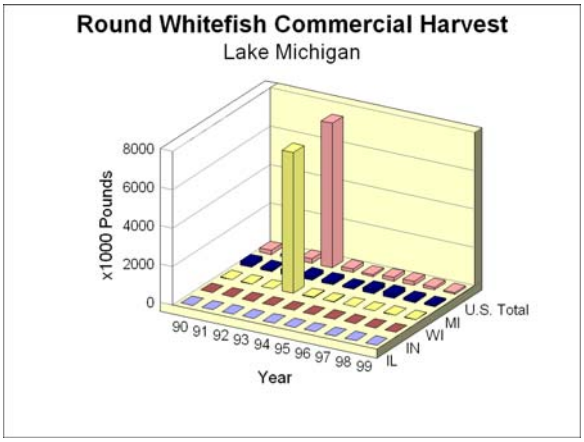

Chub Commercial Harvest
Lake Michigan
x1000 Pounds
5000
4000
3000
2000
1000
0
90 91 92 93 94 95 96 97 98 99
Year
IN
IL
MI
WI
U.S. Total


Smelt Commercial Harvest
Lake Michigan
x1000 Pounds
3500
3000
2500
2000
1500
1000
500
0
90 91 92 93 94 95 96 97 98 99
Year
IL
IN
MI
WI
U.S. Total


Lake Trout Commercial Harvest
Lake Michigan
x1000 Pounds
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
WI
IL
IN
MI
U.S. Total


Yellow Perch Commercial Harvest
Lake Michigan
x1000 Pounds
3000
2500
2000
1500
1000
500
0
90 91 92 93 94 95 96 97 98 99
Year
MI
IL
WI
IN
U.S. Total


Alewife Commercial Harvest
Lake Michigan
x1000 Pounds
12000
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
IL
IN
MI
WI
U.S. Total


Round Whitefish Commercial Harvest
Lake Michigan
x1000 Pounds
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
IL
IN
WI
MI
U.S. Total

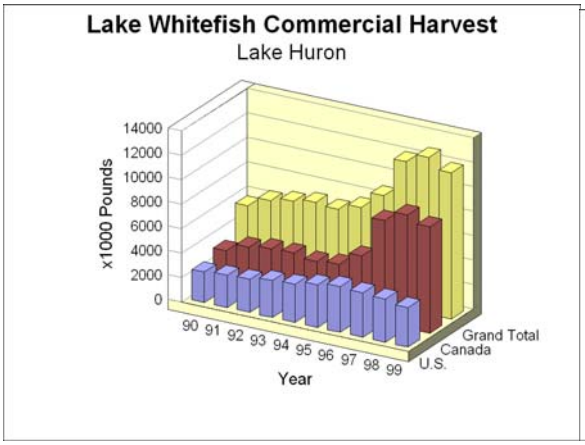
Lake Huron Commercial Fishery

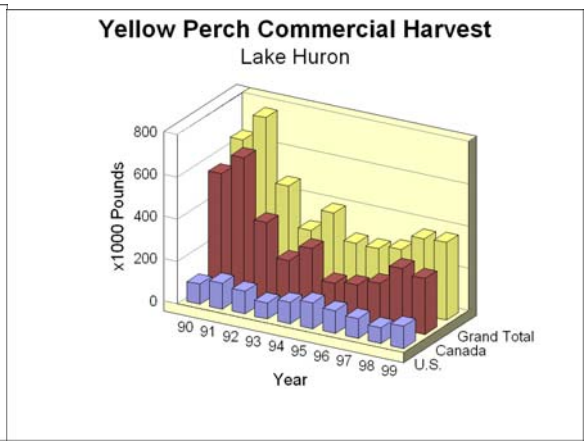
In 2000 the lake whitefish was the most harvested fish in both U.S. and Canadian waters of Lake Huron accounting for over 12.5 million pounds and worth over $10.5 million in dockside value (Table 4). Most of this lake whitefish harvest came from Canadian waters. Yellow perch was the second most valued fish in dockside value with most of this species coming from Canadian waters.

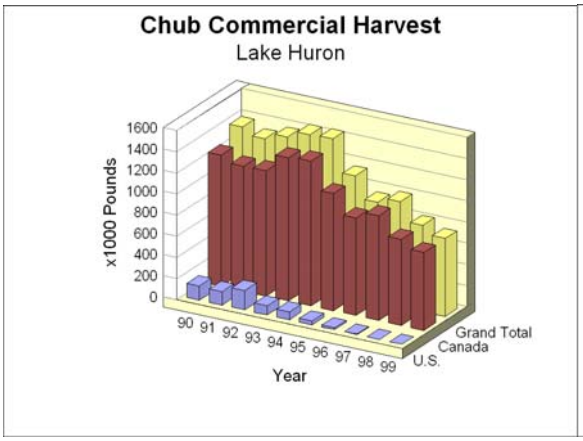
Table 4. Lake Huron commercial fish harvest by pounds and value in the year 2000.

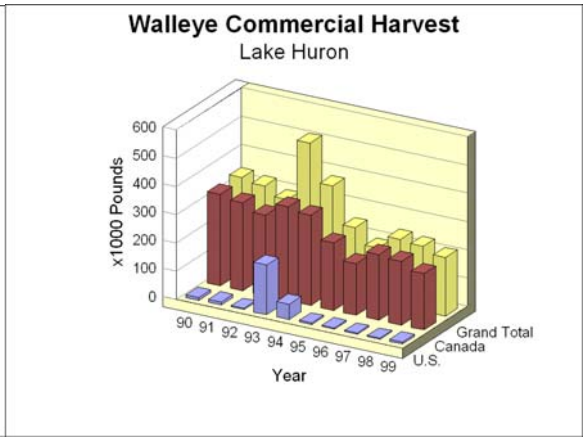
Species	U.S. lbs	U.S. Value	Canada lbs	CDN Value (U.S.$)	Total lbs	Total Value	$/lb
Lake Whitefish	3622278	$3,706,606	9065000	$6,802,376	12687278	$10,508,982	$0.83
Yellow Perch	91908	$246,309	309000	$608,668	400908	$854,977	$2.13
Chubs	676	$691	299000	$300,495	299676	$301,186	$1.01
Walleye	7475	$12,636	199000	$275,993	206475	$288,629	$1.40
Lake Trout	139629	$75,424	433000	$176,967	572629	$252,391	$0.44
Pacific Salmon	470730	$240,107	0	$0	470730	$240,107	$0.51
Channel Catfish	230835	$133,825	24000	$7,558	254835	$141,383	$0.55
Carp	34620	$19,825	1000	$101	35620	$19,926	$0.56

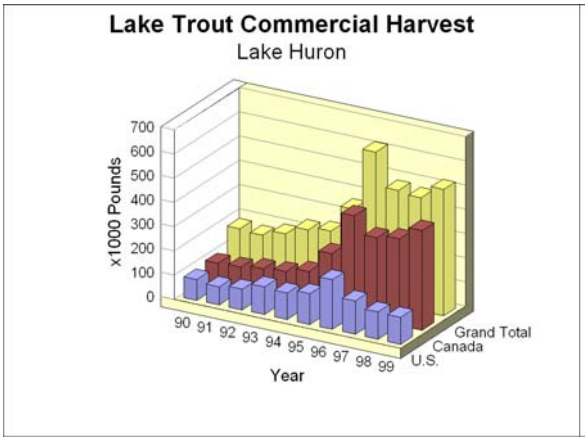
During the early 1990s the lake whitefish harvest from Lake Huron was almost evenly split between the U.S. and Canada, but in the late 1990s more of this fish was harvested from Canadian waters. The yellow perch harvest from Michigan waters of Lake Huron was relatively steady through the 1990s but in every year it was less than the Canadian harvest. The Canadian fishery dominated the harvest for chubs, walleye, and lake trout in Lake Huron as compared to the U.S. fishery. The U.S. fishery dominated the harvest for salmon, catfish, and carp as compared to the Canadian fishery. Declines in the harvest of carp can be attributed to the harvest restrictions on taking larger fish because of contaminant concerns. Refer to the following graphs.

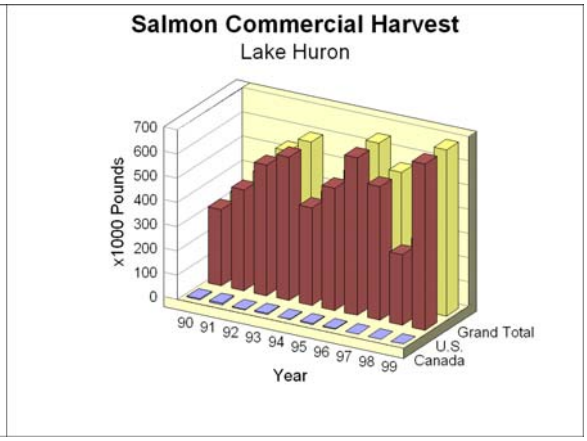

Lake Whitefish Commercial Harvest
Lake Huron
x1000 Pounds
14000
12000
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.

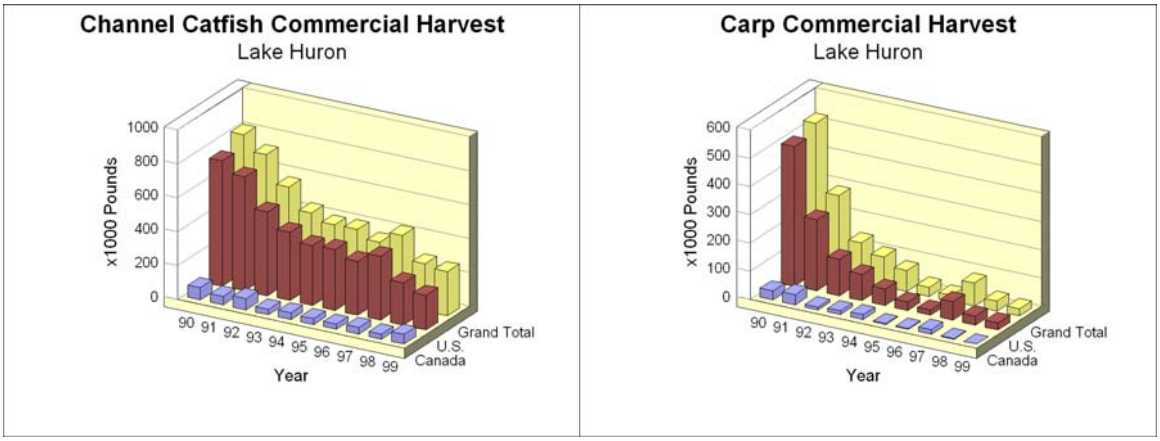

Yellow Perch Commercial Harvest
Lake Huron
x1000 Pounds
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Chub Commercial Harvest
Lake Huron
x1000 Pounds
1600
1400
1200
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Walleye Commercial Harvest
Lake Huron
x1000 Pounds
600
500
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Lake Trout Commercial Harvest
Lake Huron
x1000 Pounds
700
600
500
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S.


Salmon Commercial Harvest
Lake Huron
x1000 Pounds
700
600
500
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada


Channel Catfish Commercial Harvest
Lake Huron
x1000 Pounds
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada
Carp Commercial Harvest
Lake Huron
x1000 Pounds
600
500
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
U.S.
Canada

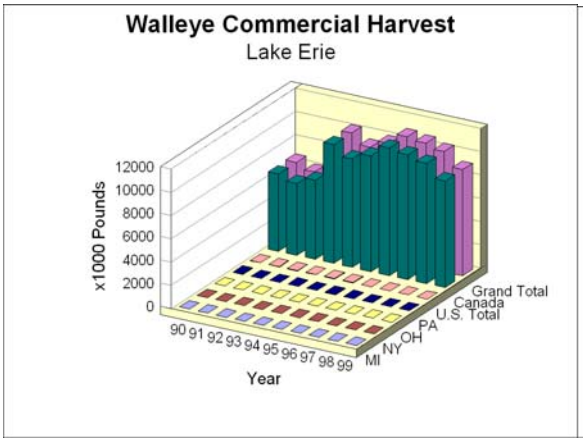
Lake Erie Commercial Fishery

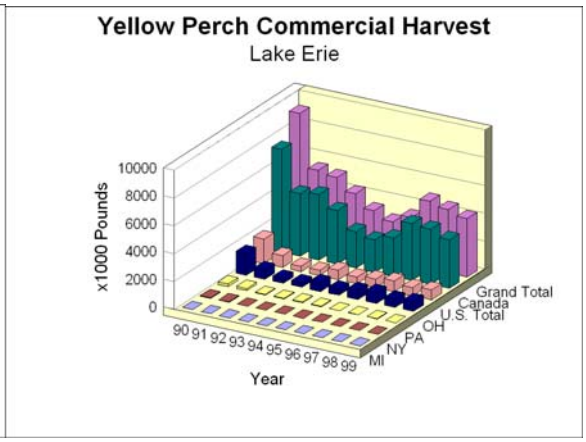
Walleye and yellow perch were the dominant fish harvested from Lake Erie in 2000 with the majority coming from Canadian waters. Walleye harvest totaled just over 7 million pounds with a dockside value of nearly $10 million. Yellow perch harvest totaled over 4.3 million pounds with a dockside value of $9.2 million (Table 5). Other species of significant value included white bass, smelt, and lake whitefish with the majority being caught in Canadian waters.

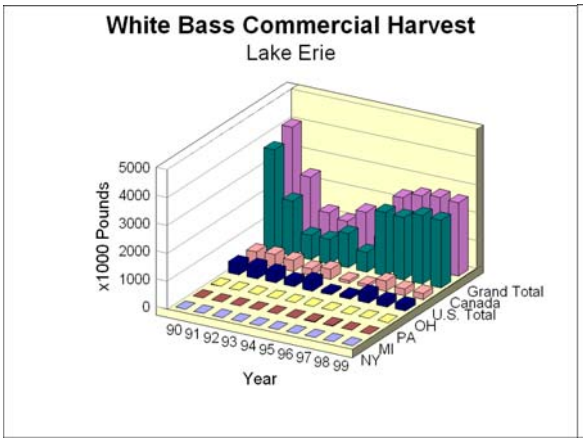
Table 5. Lake Erie commercial fish harvest by pounds and value in the year 2000.

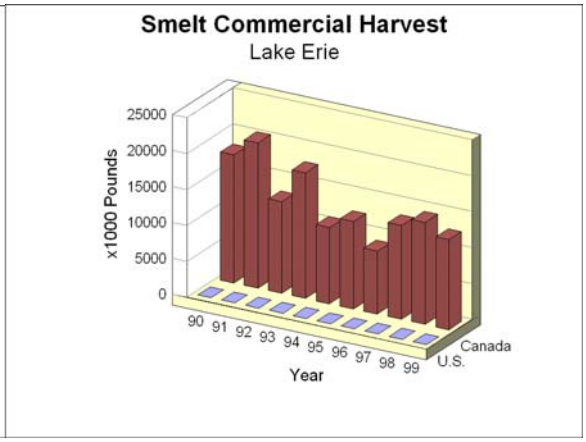
Species	U.S. lbs	U.S. Value	Canada lbs	CDN Value (U.S.$)	Total lbs	Total Value	$/lb
Walleye	186	$479	7058000	$9,788,740	7058186	$9,789,219	$1.39
Yellow Perch	959368	$2,530,721	3392000	$6,681,562	4351368	$9,212,283	$2.12
White Bass	319455	$257,335	3127000	$1,948,434	3446455	$2,205,769	$0.64
Smelt	0	$0	7179000	$1,106,284	7179000	$1,106,284	$0.15
Lake Whitefish	41475	$31,331	1312000	$984,525	1353475	$1,015,856	$0.75
White Perch	182583	$103,496	303000	$148,197	485583	$251,693	$0.52
Channel Catfish	276131	$165,425	5000	$1,575	281131	$167,000	$0.59
Carp	1269418	$120,990	184000	$18,492	1453418	$139,482	$0.10
Sheepshead	429227	$51,605	102000	$9,568	531227	$61,173	$0.12

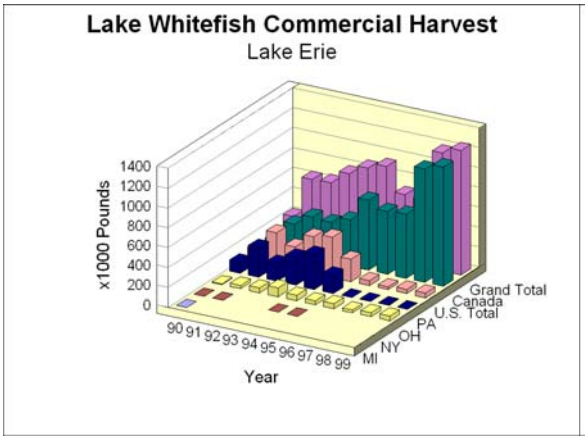
Through the 1990s there was a significant harvest of walleye, yellow perch, and white bass from the Canadian waters of Lake Erie. Some harvest of yellow perch and white bass occurred in Ohio waters. Virtually all of the smelt harvest came from Canadian waters. Lake whitefish harvest increased in Canadian waters through the 1990s while declines occurred in Ohio and Pennsylvania waters since the mid-90s. A significant fishery for white perch existed in the early 1990s in Canadian and Ohio waters with the majority of this species taken out of Canadian waters. In the later half of the 1990s the white perch fishery declined. A fishery also existed for channel catfish, carp, and sheepshead in the 1990s with the majority taken from Ohio waters. Refer to the following graphs.

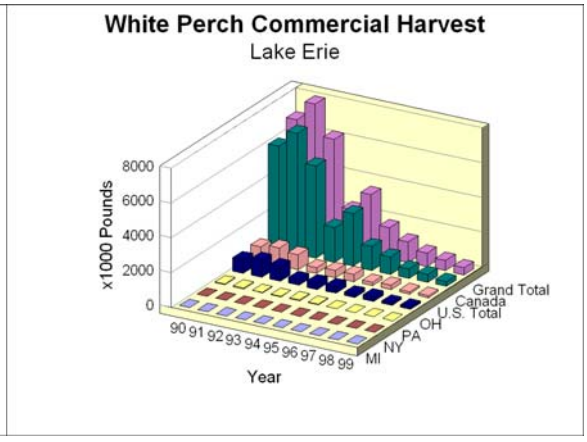

Walleye Commercial Harvest
Lake Erie
x1000 Pounds
12000
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S. Total
PA
OH
NY
MI

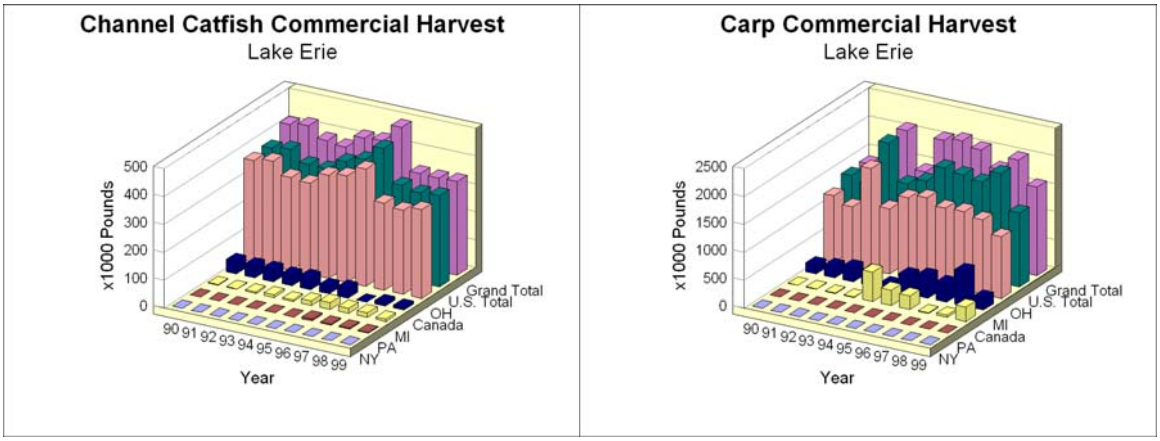

Yellow Perch Commercial Harvest
Lake Erie
x1000 Pounds
10000
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S. Total
OH
PA
NY
MI

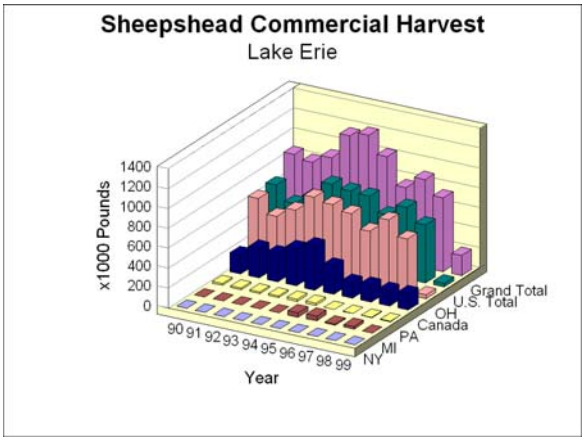

White Bass Commercial Harvest
Lake Erie
x1000 Pounds
5000
4000
3000
2000
1000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S. Total
OH
PA
MI
NY


Smelt Commercial Harvest
Lake Erie
x1000 Pounds
25000
20000
15000
10000
5000
0
90 91 92 93 94 95 96 97 98 99
Year
Canada
U.S.


Lake Whitefish Commercial Harvest
Lake Erie
x1000 Pounds
1400
1200
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S. Total
PA
OH
NY
MI


White Perch Commercial Harvest
Lake Erie
x1000 Pounds
8000
6000
4000
2000
0
90 91 92 93 94 95 96 97 98 99
Year
Grand Total
Canada
U.S. Total
OH
PA
NY
MI


Channel Catfish Commercial Harvest
Lake Erie
x1000 Pounds
500
400
300
200
100
0
90 91 92 93 94 95 96 97 98 99
Year
NY
PA
MI
OH
Canada
U.S. Total
Grand Total
Carp Commercial Harvest
Lake Erie
x1000 Pounds
2500
2000
1500
1000
500
0
90 91 92 93 94 95 96 97 98 99
Year
NY
PA
MI
OH
Canada
U.S. Total
Grand Total


Sheepshead Commercial Harvest
Lake Erie
x1000 Pounds
1400
1200
1000
800
600
400
200
0
90 91 92 93 94 95 96 97 98 99
Year
NY
MI
PA
OH
Canada
U.S. Total
Grand Total

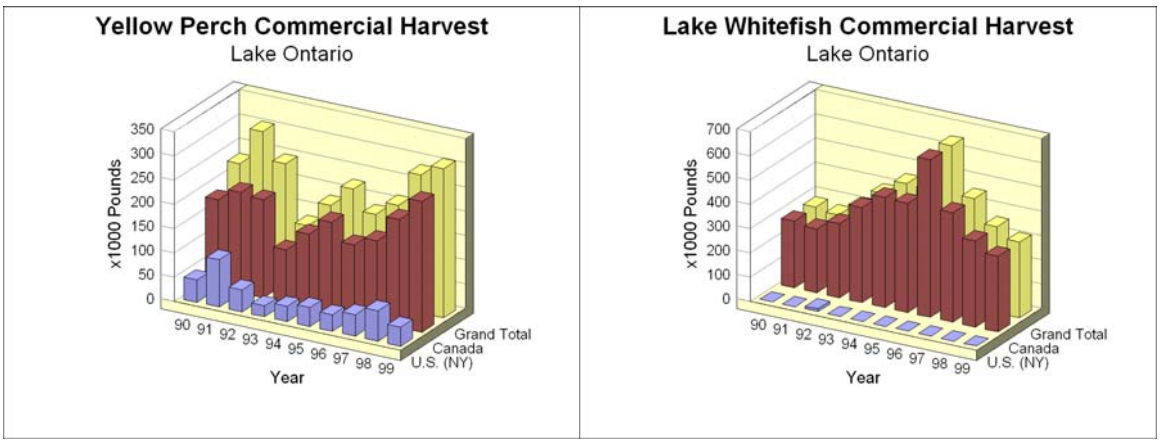
Lake Ontario Commercial Fishery

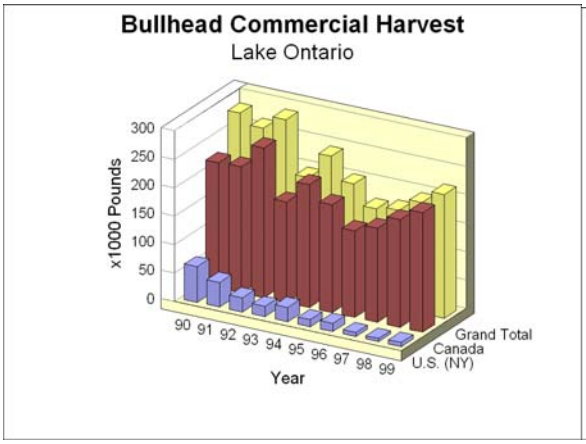
Lake Ontario does not support a large commercial fishery. The major fish species caught in 2000 were yellow perch, lake whitefish, bullhead, and to a lesser extent American eel. Most or all of these species came from Canadian waters (Table 6).

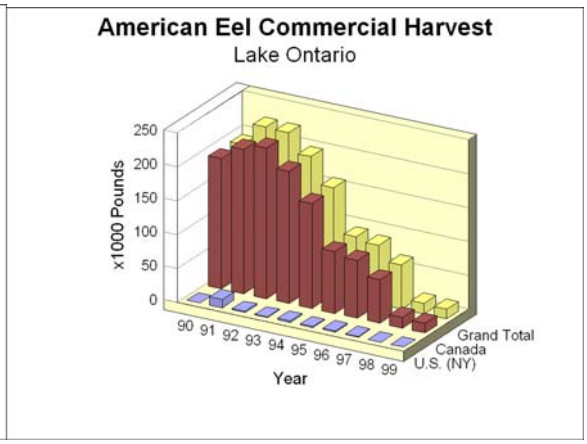
Table 6. Lake Ontario commercial fish harvest by pounds and value in the year 2000.

Species	U.S. lbs	U.S. Value	Canada lbs	CDN Value (U.S.$)	Total lbs	Total Value	$/lb
Yellow Perch	59928	$104,275	256000	$504,269	315928	$608,544	$1.93
Lake Whitefish	0	$0	293000	$219,867	293000	$219,867	$0.75
Bullheads	5790	$4,343	176000	$40,093	181790	$44,436	$0.24
American Eel	0	$0	29000	$41,192	29000	$41,192	$1.42

The harvest of yellow perch from Lake Ontario was relatively steady through the 1990s with the majority of the harvest occurring in Canadian waters. Lake whitefish harvest peaked in 1996 with virtually most of the harvest coming from Canadian waters. Bullhead harvest declined throughout the 1990s in New York waters and was relatively stable in Canadian waters where most of the harvest occurred. American eel harvest began a decline in the 1990s with the majority of this harvest occurring in Canadian waters. Lower numbers of eels have attributed to this decline. Refer to the following graphs.







Acknowledgments

Valuable input on the Great Lakes commercial fishery and review of this publication was provided by Rob Graham (Ontario Commercial Fisheries' Association), Forrest Williams (Michigan Fish Producers Association), Jim Thannum and Bill Mattes (Great Lakes Indian Fish and Wildlife Commission), Jeff Parker (Chippewa Ottawa Resource Authority), and Chuck Pistis (Michigan Sea Grant Extension).

References

Baldwin, N.A., R.W. Saalfeld, M.R. Dochoda, H.J. Buettner, and R.L. Eshenroder. (August 2002). Commercial fish production in the Great Lakes 1867-2000. http://www.glfc.org/databases/commercial/commerc.asp

U.S. Department of the Interior, U.S. Geological Survey–Great Lakes Science Center. (February 2003). Commercial fishing reports. http://www.glsc.usgs.gov/data/commercialFishingReports.htm